DVD Player

DVP3680KX

DVP3680KX/77/78

Service

Service

Service

Service Manual

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CLASS 1
LASER PRODUCT

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PHILIPS

Safety instruction, Warning & Notes

Safety instruction

1. General safety

Safety regulations require that during a repair:

. Connect the unit to the mains via an isolation transformer.

. Replace safety components indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

. Route the wires/cables correctly, and fix them with the mounted cable clamps.

. Check the insulation of the mains lead for external damage.

. Check the electrical DC resistance between the mains plug and the secondary side:

1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
2) Set the mains switch the "on" position (keep the mains cord unplug).
3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
4) Repair or correct unit when the resistance measurement is less than 1MΩ.
5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
6) Switch the unit "off", and remove the wire between the two pins of the mains plug.

2.Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser device unit

Type : Semiconductor laser GaAlAs

Wavelength : 650nm (DVD)

: 780nm (VCD/CD)

Output power : 7mW (DVD)

: 10mW (DVD /CD)

Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

Warning

1.General

. All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handing during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:

1) Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
2) Wristband tester 4822 344 13999.

. Be careful during measurements in the live voltage section. The primary side of the power supply , including the heat sink, carries live mains voltage when you connect the player to the mains (even when the player is “off”!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A “lighting stroke” and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.

. Never replace modules, or components, while the unit is “on”.

2. Laser

. The use of optical instruments with this product, will increase eye hazard.

. Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.

. Repair handing should take place as much as possible with a disc loaded inside the player.

. Text below is placed inside the unit, on the laser cover shield:

CAUTION: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM.

Notes: Manufactured under licence from Dolby Laboratories. The double-D symbol is trademarks of Dolby Laboratories, Inc. All rights reserved.

Service Hints

CAUTION

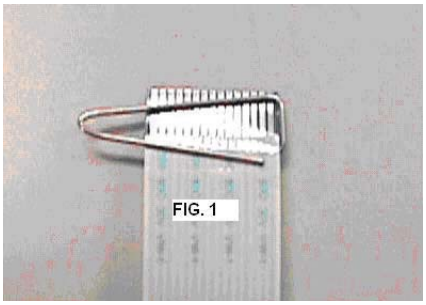
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE DRIVE ELECTRONICS WHEN CONNECTING A NEW DRIVE.THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

- **SWITCH OFF POWER SUPPLY**
- **ESD PROTECTION**

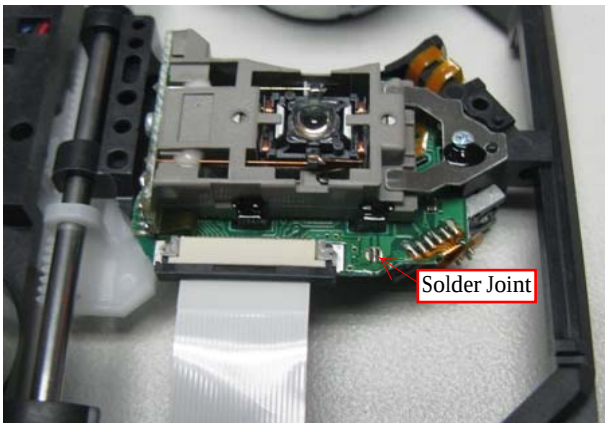
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the defective loader :

1. Dismantling of the loader to access the ESD protection point if necessary.
2. **Solder the ESD protection point*.**
3. Disconnect flexfoil cable from the defective loader.
4. Put a paper clip on the flexfoil to short-circuit the contacts (fig.1)
5. Replace the defective loader with a new loader.
6. Remove paperclip from the flexfoil and connect it to the new loader.
7. Remove solder joint on the ESD protection point.



ATTENTION: The laser diode of this loader is protected against ESD by a solder joint which shortcircuits the laserdiode to ground. For proper functionality of the loader this solder joint must be remove **after** connection loader to the set.



(ESD protection point is accessible from top of loader)

Only applicable for defective loader needed to be sent back to supplier for failure analysis and to support backcharging evidence.
This is also applicable for all partnership workshops.

Notes

Lead-Free requirement for service

INDENTIFICATION:

Regardless of special logo (not always indicated)

One must treat all sets from 1.1.2005 onwards, according next rules.

Important note: In fact also products a little older can also be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed
  solder alloy types (leaded and lead-free). If one cannot avoid, clean carefully the
  solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use highest lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. This will be communicated via AYS-website.
  Do not re-use BGAs at all.
- For sets produced before 1.1.2005, containing leaded soldering-tin and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website:
  www.atyourservice.ce.Philips.com

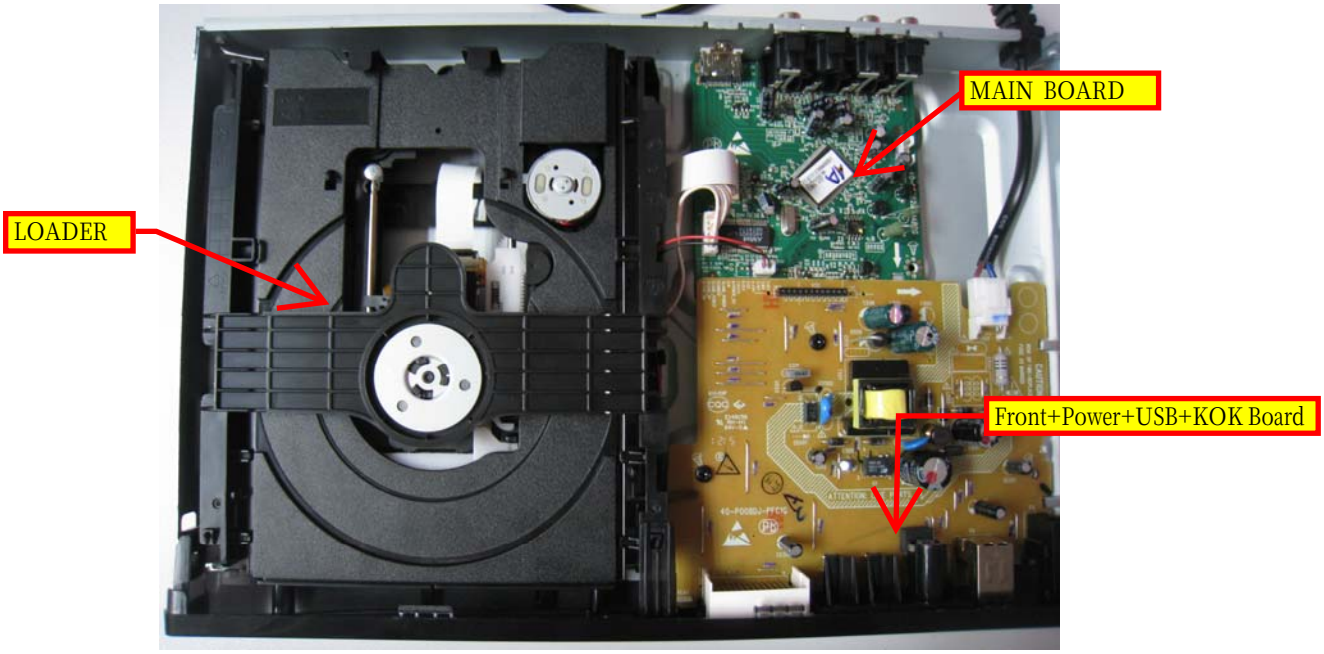
You find more information to:

BGA-de-/soldering (+ baking instructions)
Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

PCB Location:



Repair Scenario Matrix

Type/Versions / Board in used	DVP3680KX
	/77/78
Main Board	C/M
Front&Power&USB Board	C/M

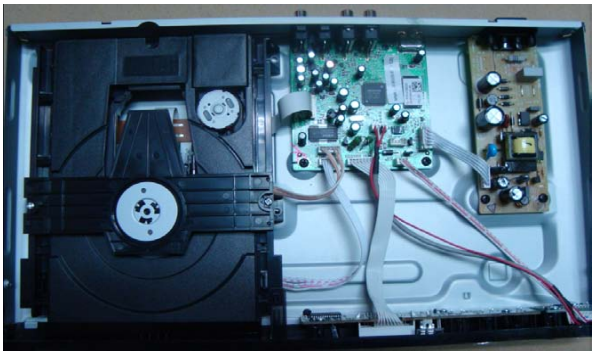
***M:Module Level Repair**
***C:Component Level Repair**
***X:Used**

Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.
Step1: Remove 5 screws around the Top Cover, and then remove the Top Cover (Figure 1).



The sample is DVP3880K/98.

Figure 1

Step2: If it is necessary to dismantle Loader or Front Panel, the Front door should be removed first. (Figure 2)
Note: Make sure to operate gently otherwise the guider would be damaged.

Please kindly note that dismantle the front door assembly carefully to avoid damage tray and the front door.

Figure 2

Mechanical and Dismantling Instructions

Dismantling Instruction Detailed information please refer to the model set.

Step3: If the tray can't open in normal way, you can make it through the instruction as below (Figure 3).
Note: Make sure to operate gently otherwise the guider would be damaged.

Figure 3

Step4: Dismantling Front Panel, disconnect the connectors (XP5, XP6,XP7), need release 4 snaps of Front Panel & 2 snaps of bottom cabinet , then gently pull the Panel out from the set. (Figure 4 - Figure 6)

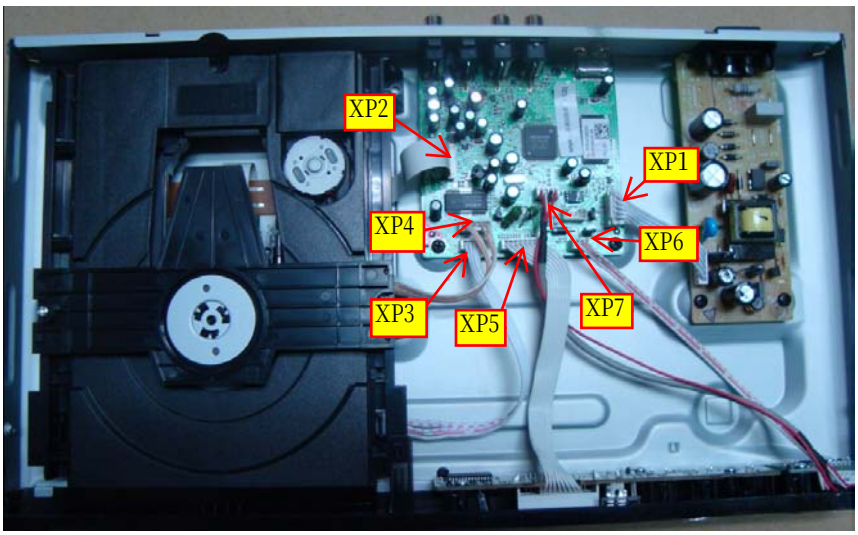


Figure 4

Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

Step5: Dismantling Loader, disconnect the 3 connectors (XP2, XP3, XP4) aiming in the below figure, and remove 1 screw that connects the loader and the bottom cabinet. (Figure 5)

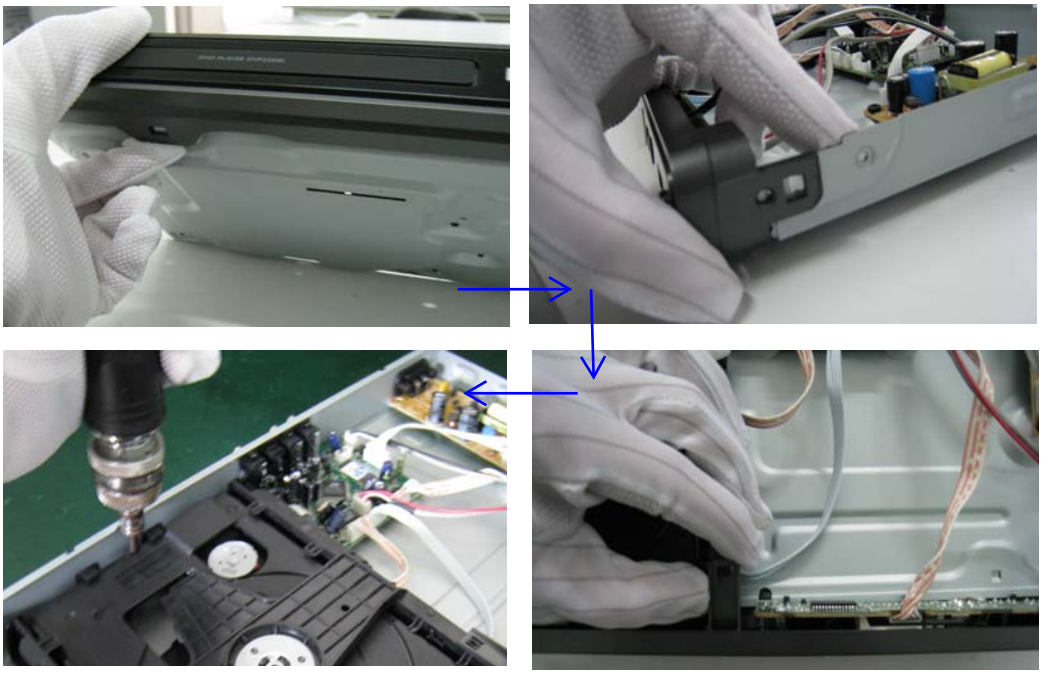


Figure 5

Step6: Dismantling Main Board, first disconnect the connector (XP1), and then remove 5 screws. (Figure 6)

Step7: Remove the 4 screws on Power Board to dismantle the Power Board. (Figure 6)

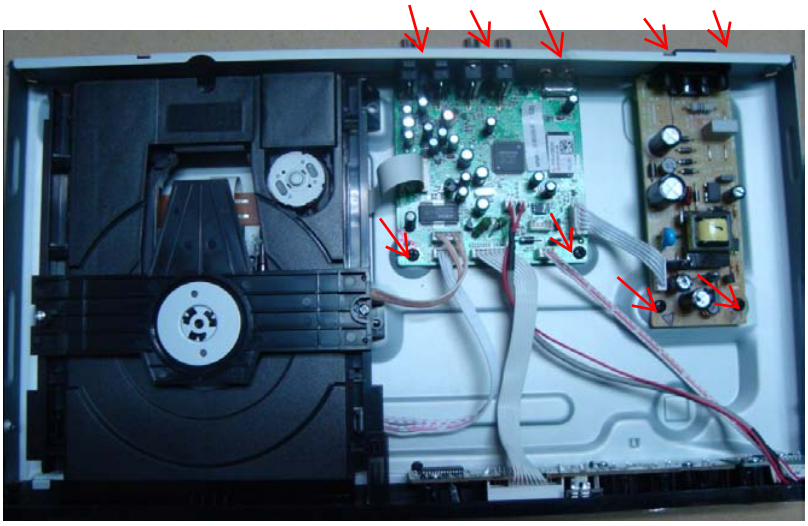


Figure 6

Software upgrade

Preparation to upgrade software

1) Start the CD Burning software and create a new CD project (Data Disc) with the following setting:
   Label: DVP3XXX (No need the label name)
   File Name: DVPXXXX_XX.BIN
   Power on the set and open the tray, then press <option> to check the File Name.
   Note: It is required capital letter for the File System name
2) Burn the data onto a blank CDR

A. Procedure for software upgrade:

1) Power on the set and insert the prepared Upgrade CDR.
2) The set will starts reading disc & response with the following display TV screen:
   Upgrade file detected
   VXX(SW VER)
   <X> <O>
3) Press <OK> button to confirm, then screen will display :
   Upgrade file detected
   UPGRADING…
   Do not power off…
4) The upgraded tray will automatically open when files coping complete, then take out the disc.
5) About 1 minute later, the trace will automatically close when upgrading complete.

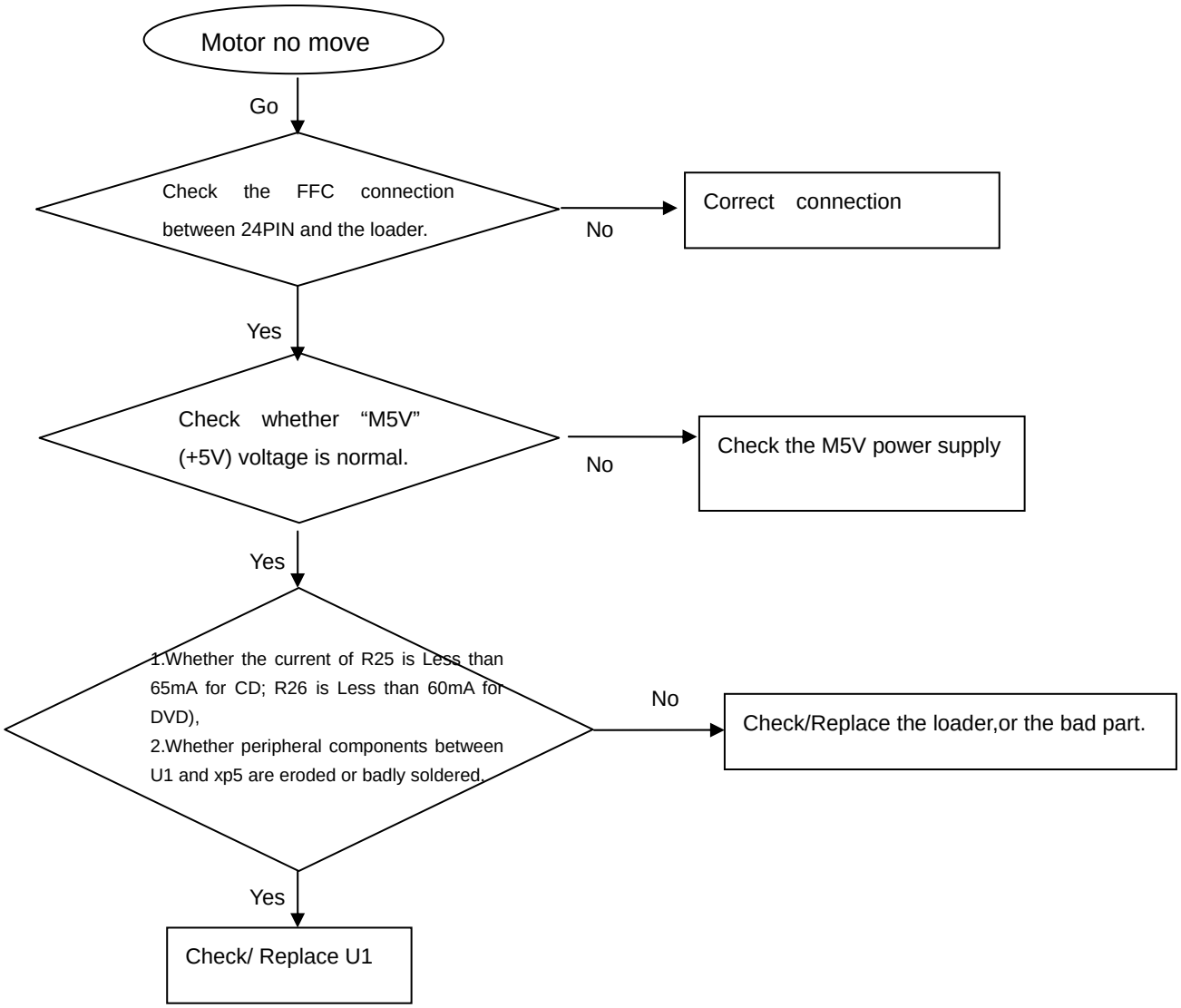
B. Read out the software versions to confirm upgrading

1) Power on the set and press <Setup> button on the remote control.
2) Press <Up><Next>< Up >< Up ><OK> button.
   The software version and other information are display on the TV screen as follows:

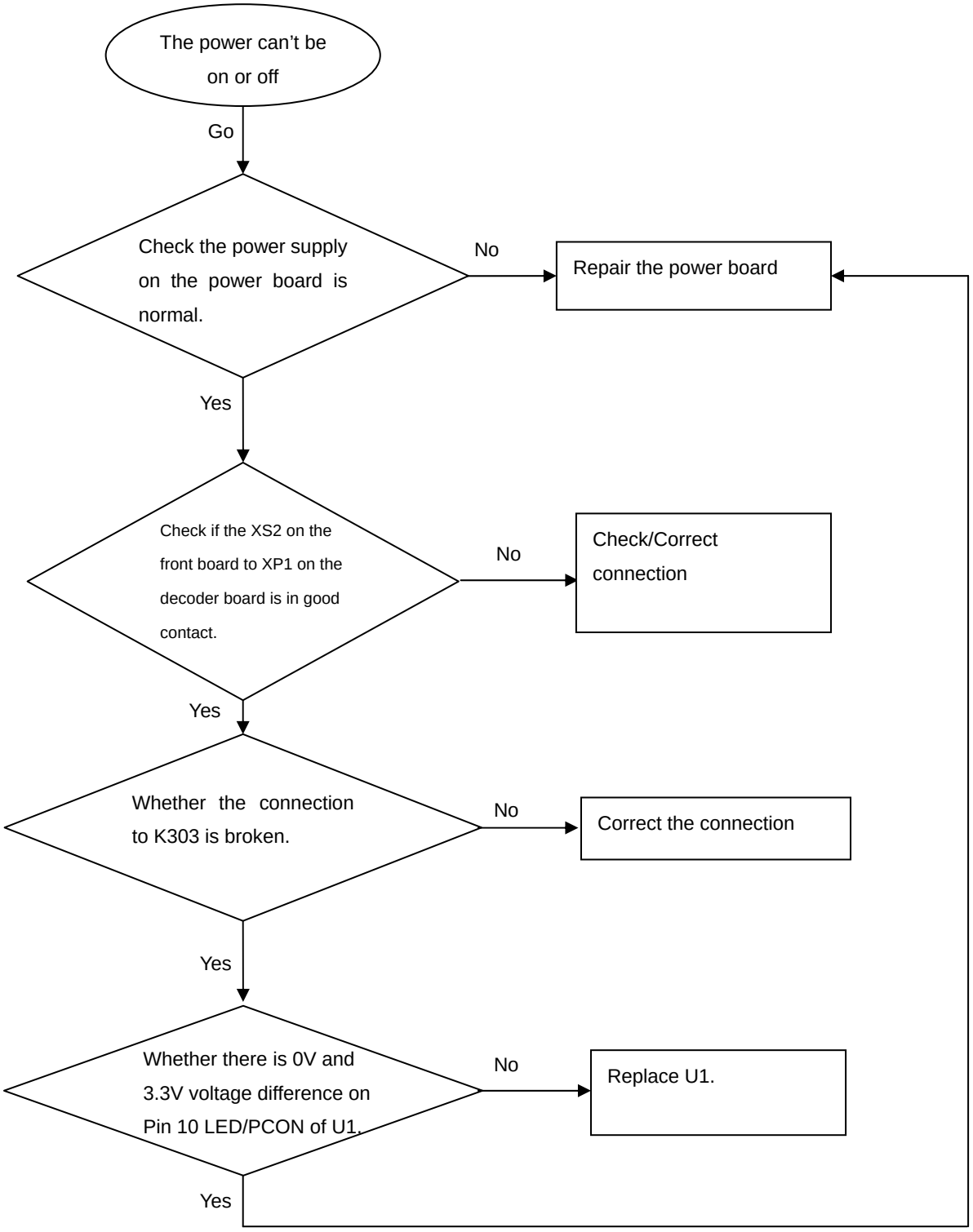
Model	DVP3XXX_ XX
File Name	DVPXXXX_XX.BIN
Version	XX.XX.XX.XX
8203RX	XX.XX.XX.XX
RISC	XXXXXX-XXX-XXX
Servo	XXXXX-XXX-XXXX
Region Code	X

Caution: The set must not be power off during upgrading, Otherwise the Main board will be damaged entirely.

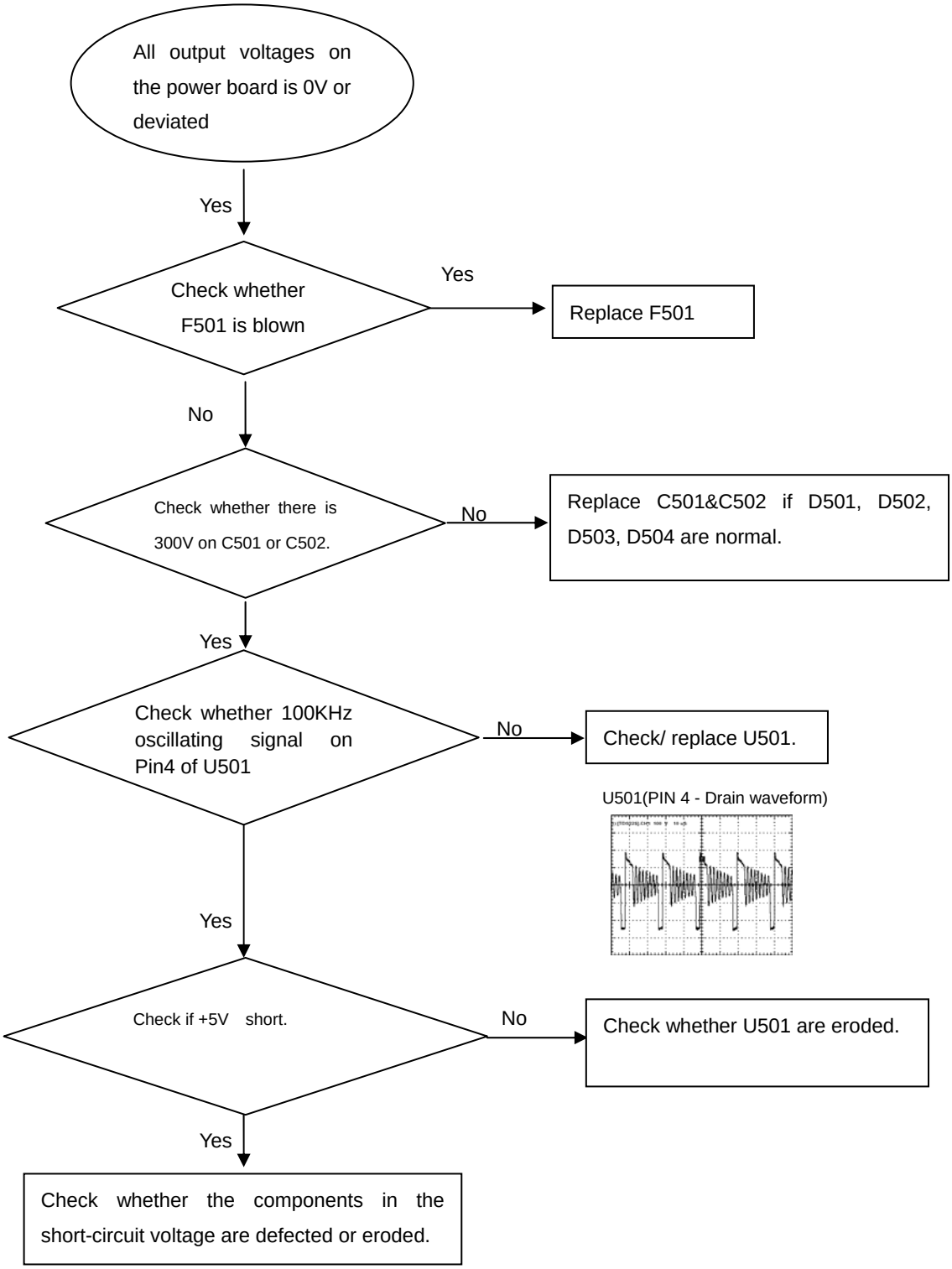
Spindle motor does not move


Motor no move
Go
Check the FFC connection between 24PIN and the loader.
No
Correct connection
Yes
Check whether “M5V” (+5V) voltage is normal.
No
Check the M5V power supply
Yes
1.Whether the current of R25 is Less than 65mA for CD; R26 is Less than 60mA for DVD),
2.Whether peripheral components between U1 and xp5 are eroded or badly soldered.
No
Check/Replace the loader,or the bad part.
Yes
Check/ Replace U1

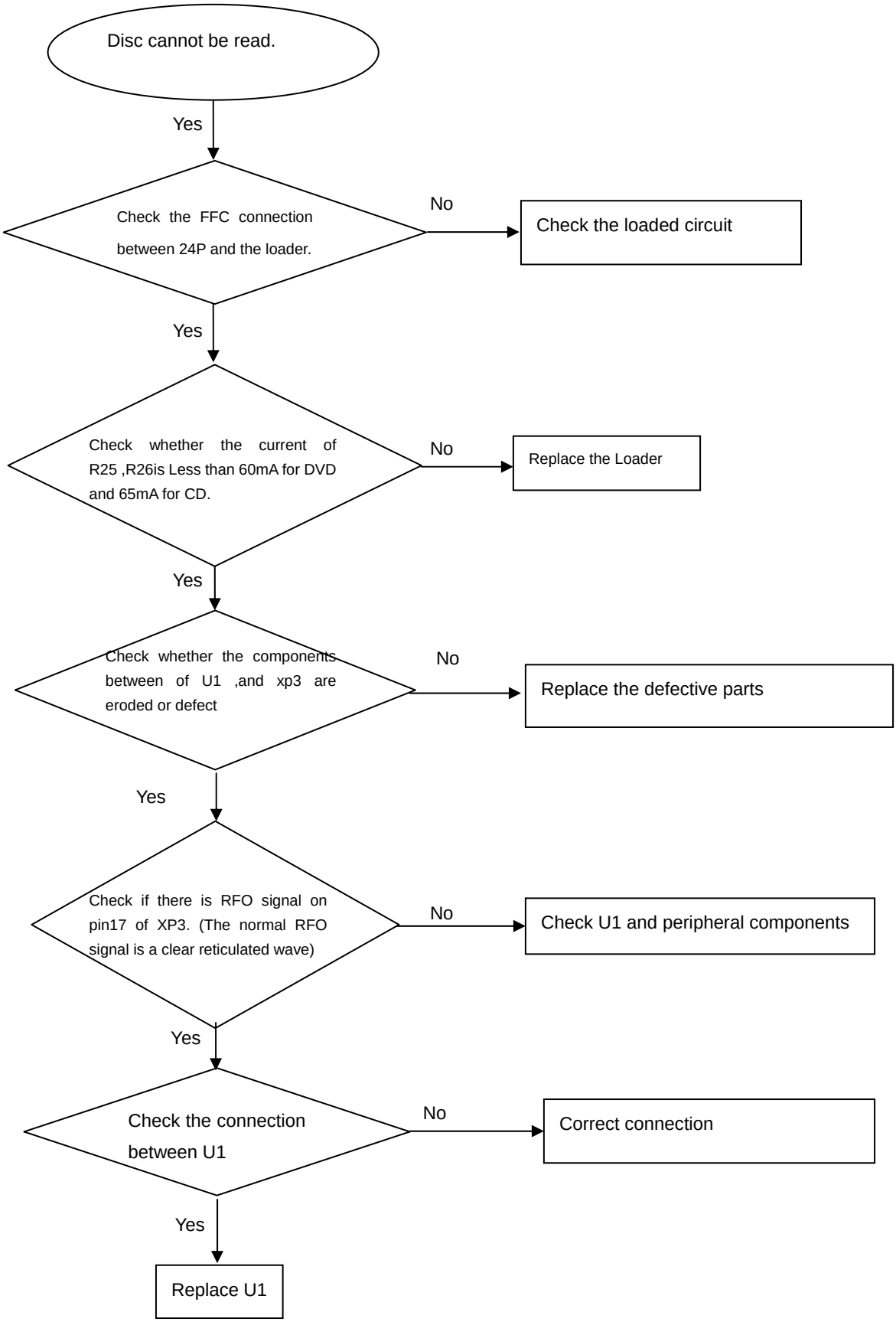
The power can not be on or off


The power can't be on or off
Go
Check the power supply on the power board is normal.
No
Repair the power board
Yes
Check if the XS2 on the front board to XP1 on the decoder board is in good contact.
No
Check/Correct connection
Yes
Whether the connection to K303 is broken.
No
Correct the connection
Yes
Whether there is 0V and 3.3V voltage difference on Pin 10 LED/PCON of U1.
No
Replace U1.
Yes

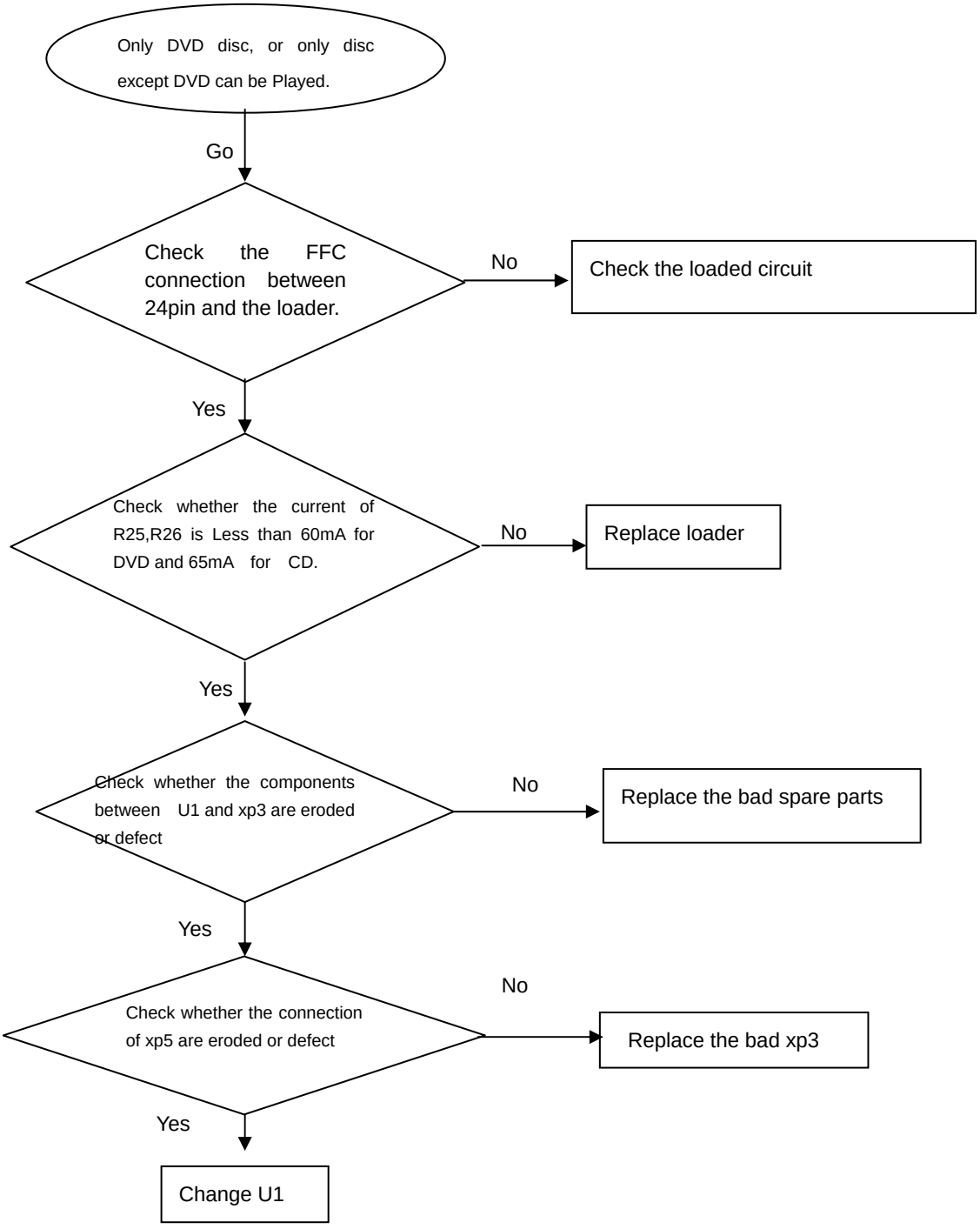
All output voltages on the power board is 0V or deviated.


All output voltages on the power board is 0V or deviated
Yes
Check whether F501 is blown
Yes
Replace F501
No
Check whether there is 300V on C501 or C502.
No
Replace C501&C502 if D501, D502, D503, D504 are normal.
Yes
Check whether 100KHz oscillating signal on Pin4 of U501
No
Check/ replace U501.
U501(PIN 4 - Drain waveform)
Yes
Check if +5V short.
No
Check whether U501 are eroded.
Yes
Check whether the components in the short-circuit voltage are defected or eroded.

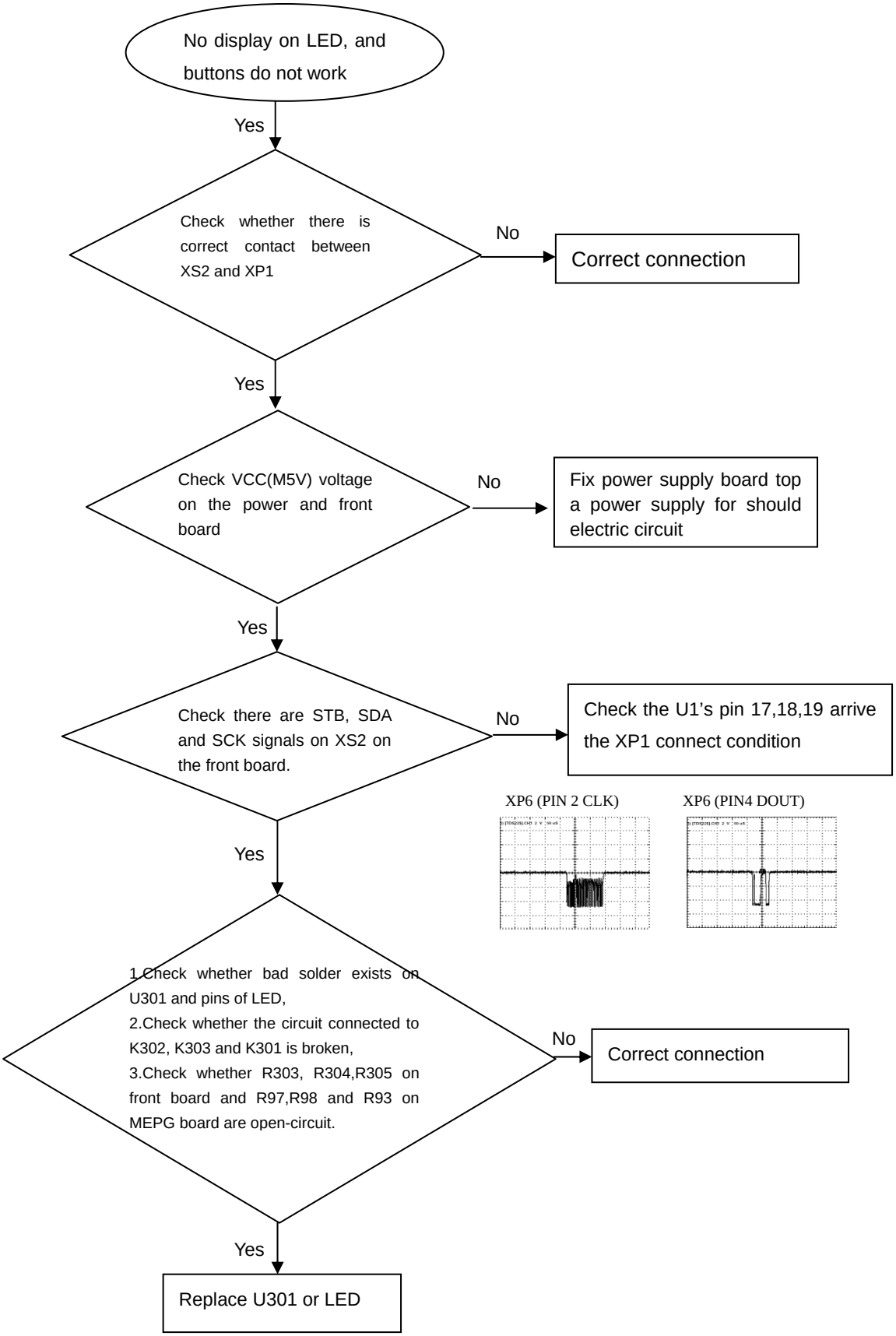
Disc cannot be read.


Disc cannot be read.
Yes
Check the FFC connection between 24P and the loader.
No
Check the loaded circuit
Yes
Check whether the current of R25 ,R26is Less than 60mA for DVD and 65mA for CD.
No
Replace the Loader
Yes
Check whether the components between of U1 ,and xp3 are eroded or defect
No
Replace the defective parts
Yes
Check if there is RFO signal on pin17 of XP3. (The normal RFO signal is a clear reticulated wave)
No
Check U1 and peripheral components
Yes
Check the connection between U1
No
Correct connection
Yes
Replace U1

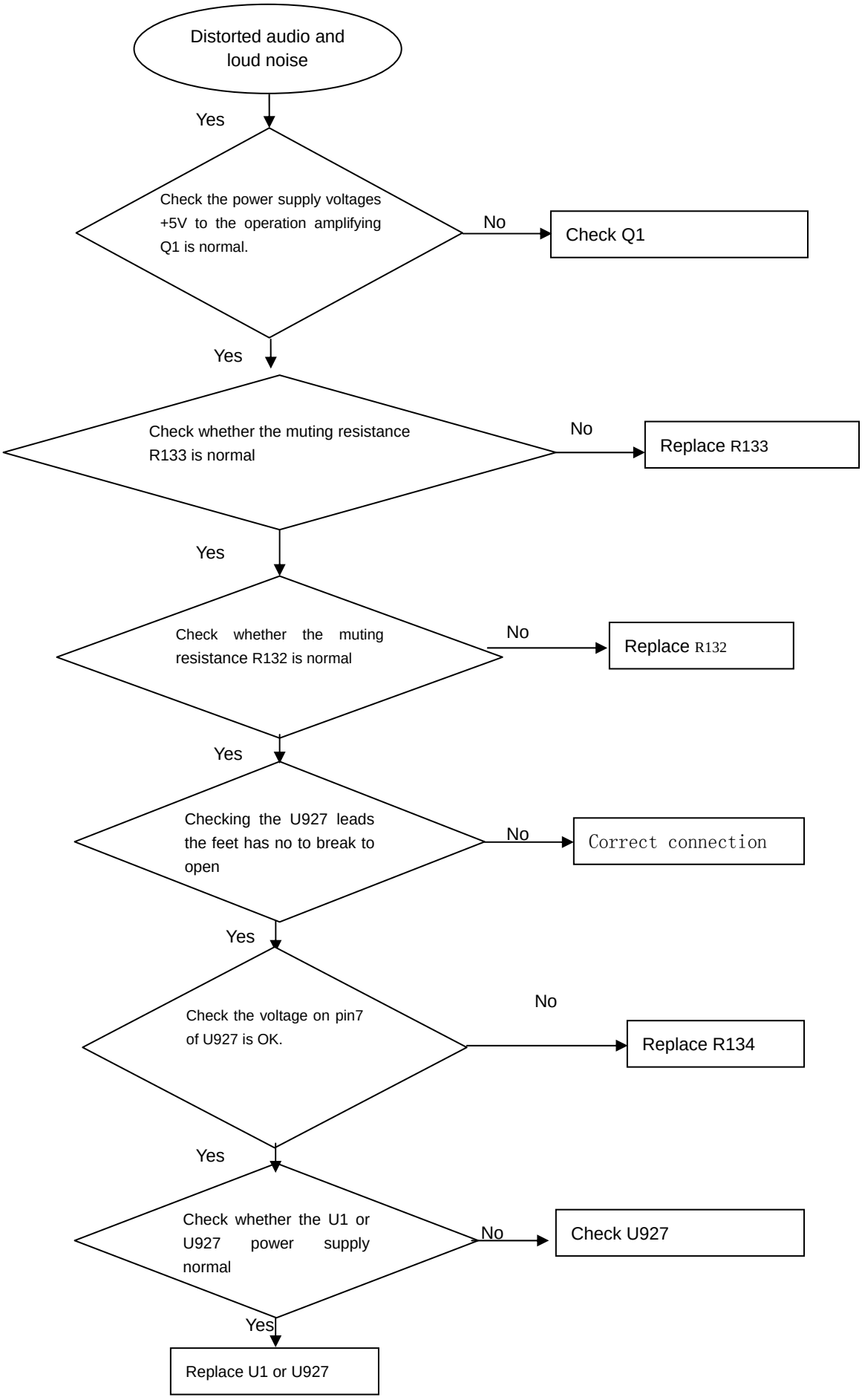
Only DVD disc or only disc except DVD can be played


Only DVD disc, or only disc except DVD can be Played.
Go
Check the FFC connection between 24pin and the loader.
No
Check the loaded circuit
Yes
Check whether the current of R25,R26 is Less than 60mA for DVD and 65mA for CD.
No
Replace loader
Yes
Check whether the components between U1 and xp3 are eroded or defect
No
Replace the bad spare parts
Yes
Check whether the connection of xp5 are eroded or defect
No
Replace the bad xp3
Yes
Change U1

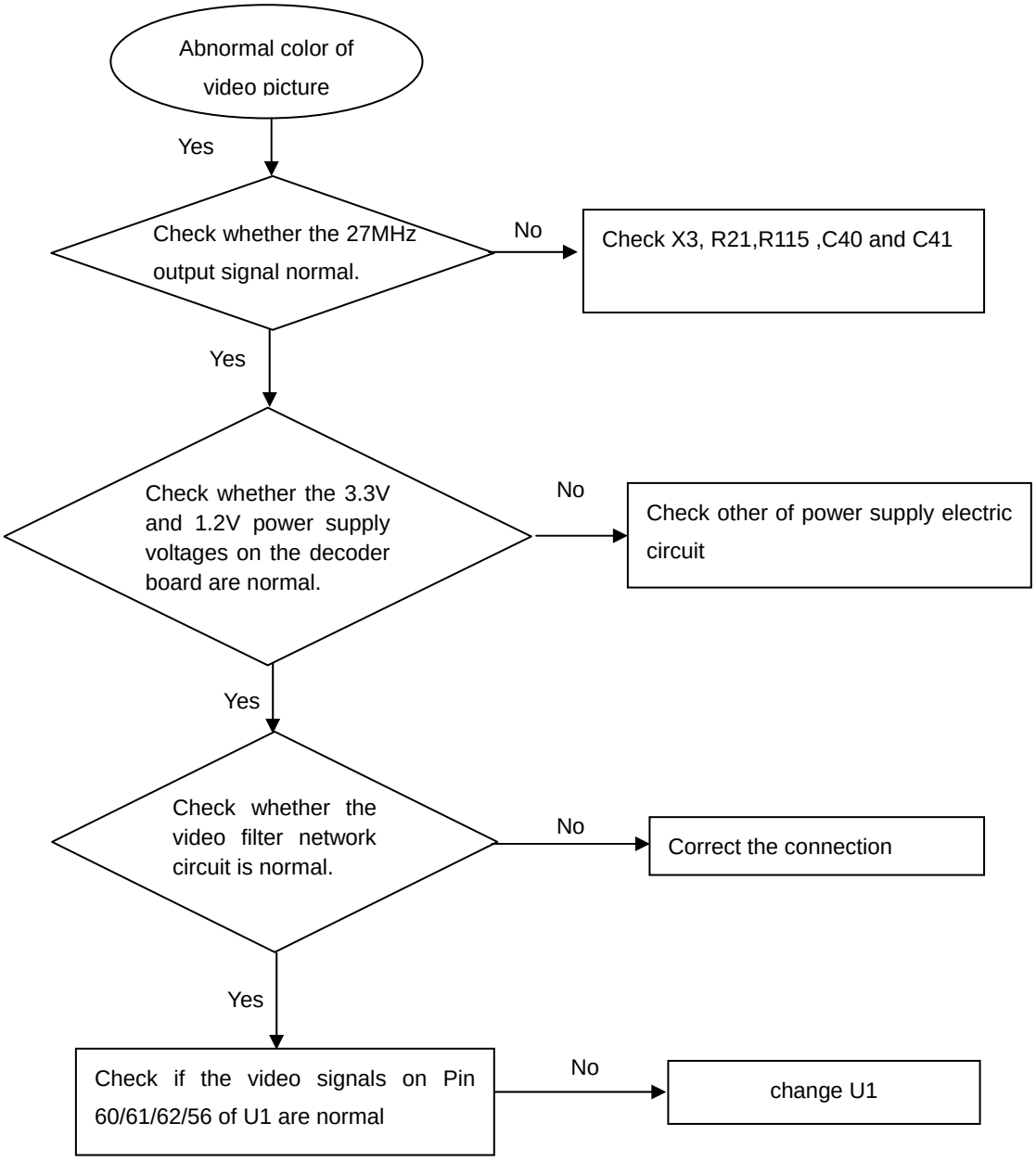
No display on LED, and buttons do not work


No display on LED, and buttons do not work
Yes
Check whether there is correct contact between XS2 and XP1
No
Correct connection
Yes
Check VCC(M5V) voltage on the power and front board
No
Fix power supply board top a power supply for should electric circuit
Yes
Check there are STB, SDA and SCK signals on XS2 on the front board.
No
Check the U1's pin 17,18,19 arrive the XP1 connect condition
XP6 (PIN 2 CLK)
XP6 (PIN4 DOUT)
Yes
1.Check whether bad solder exists on U301 and pins of LED,
2.Check whether the circuit connected to K302, K303 and K301 is broken,
3.Check whether R303, R304,R305 on front board and R97,R98 and R93 on MEPG board are open-circuit.
No
Correct connection
Yes
Replace U301 or LED

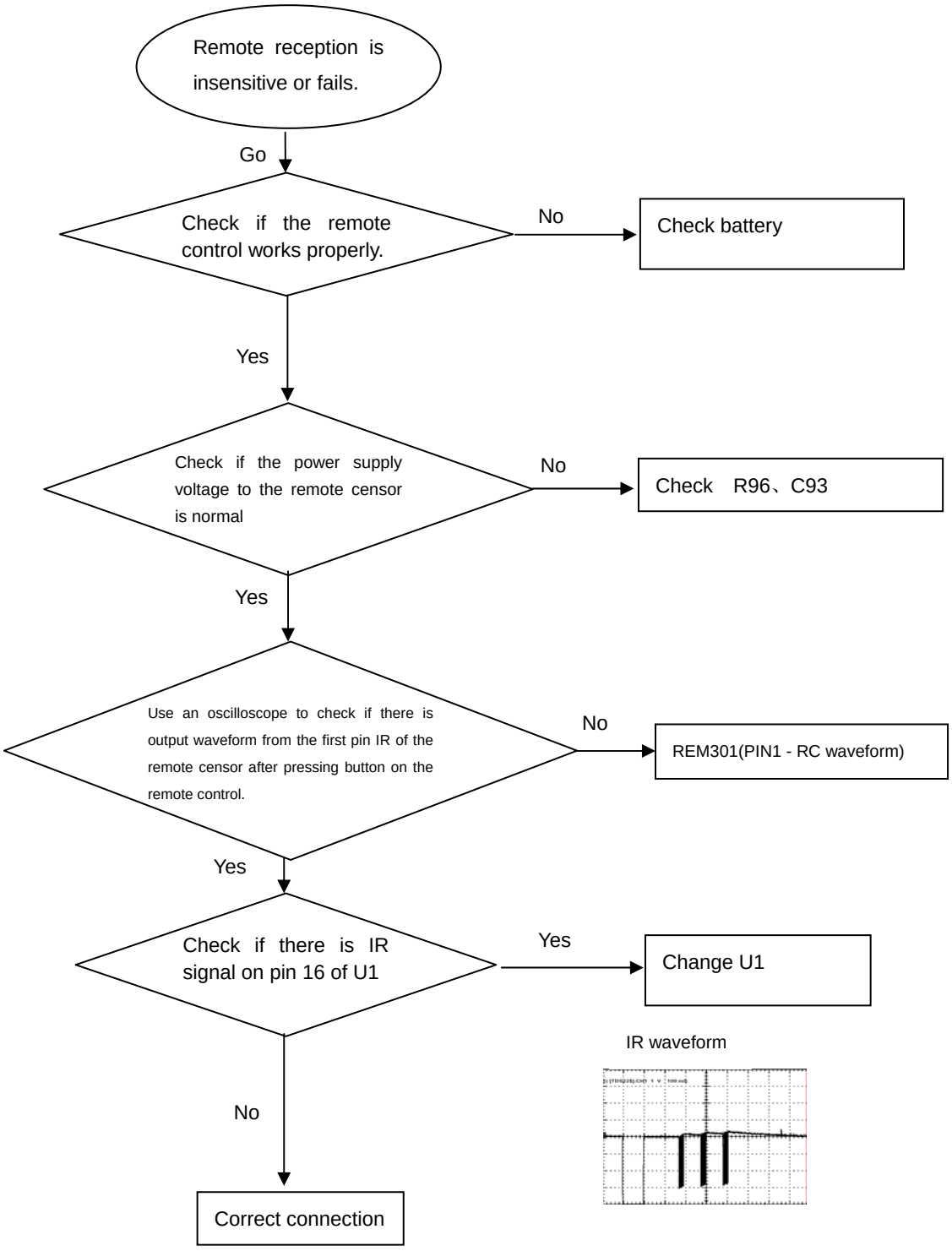
Distorted audio and loud noise



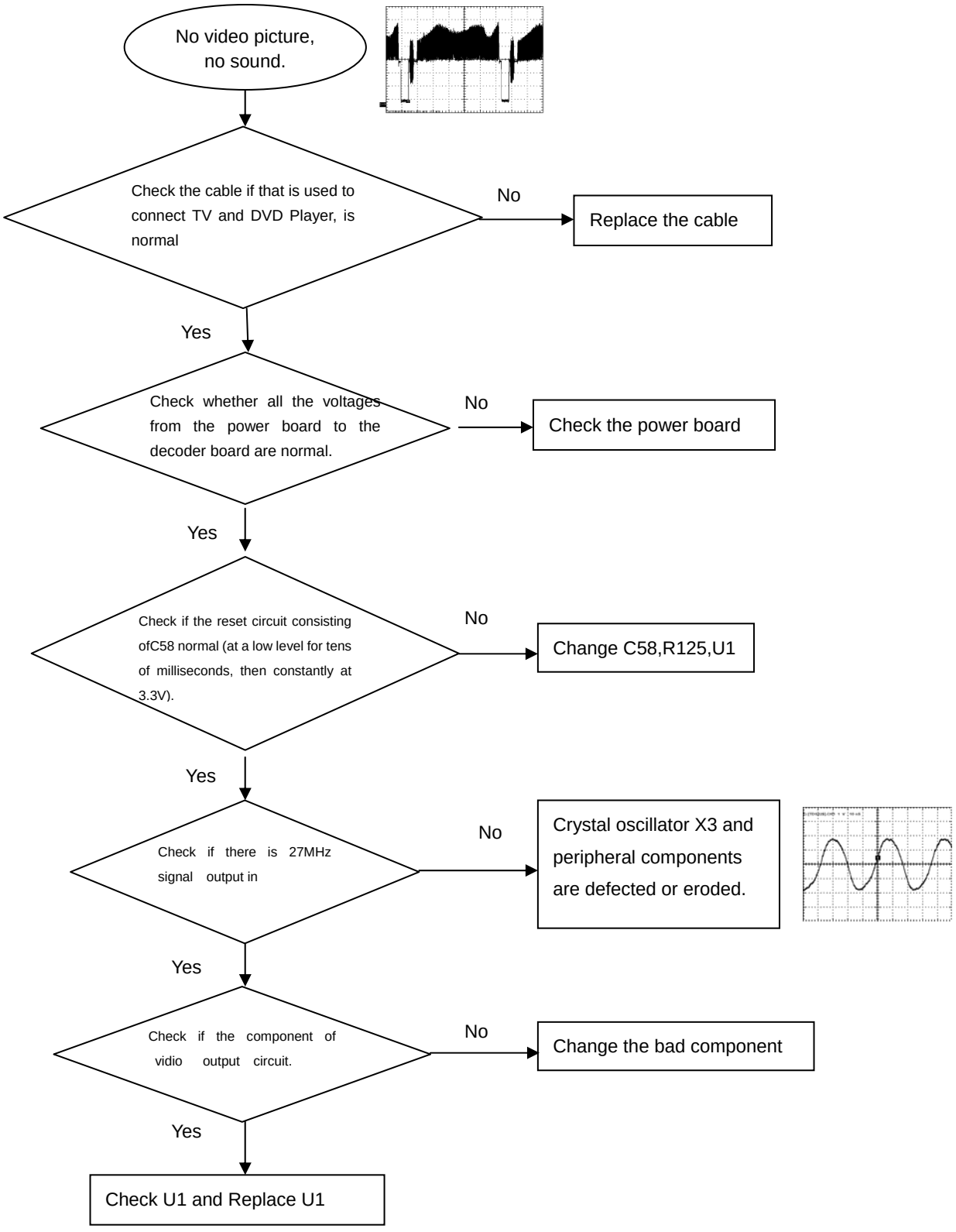
Abnormal color of video picture


Abnormal color of video picture
Yes
Check whether the 27MHz output signal normal.
No
Check X3, R21,R115 ,C40 and C41
Yes
Check whether the 3.3V and 1.2V power supply voltages on the decoder board are normal.
No
Check other of power supply electric circuit
Yes
Check whether the video filter network circuit is normal.
No
Correct the connection
Yes
Check if the video signals on Pin 60/61/62/56 of U1 are normal
No
change U1

Remote reception is insensitive or fails.


Remote reception is insensitive or fails.
Go
Check if the remote control works properly.
No
Check battery
Yes
Check if the power supply voltage to the remote censor is normal
No
Check R96、C93
Yes
Use an oscilloscope to check if there is output waveform from the first pin IR of the remote censor after pressing button on the remote control.
No
REM301(PIN1 - RC waveform)
Yes
Check if there is IR signal on pin 16 of U1
Yes
Change U1
IR waveform
No
Correct connection

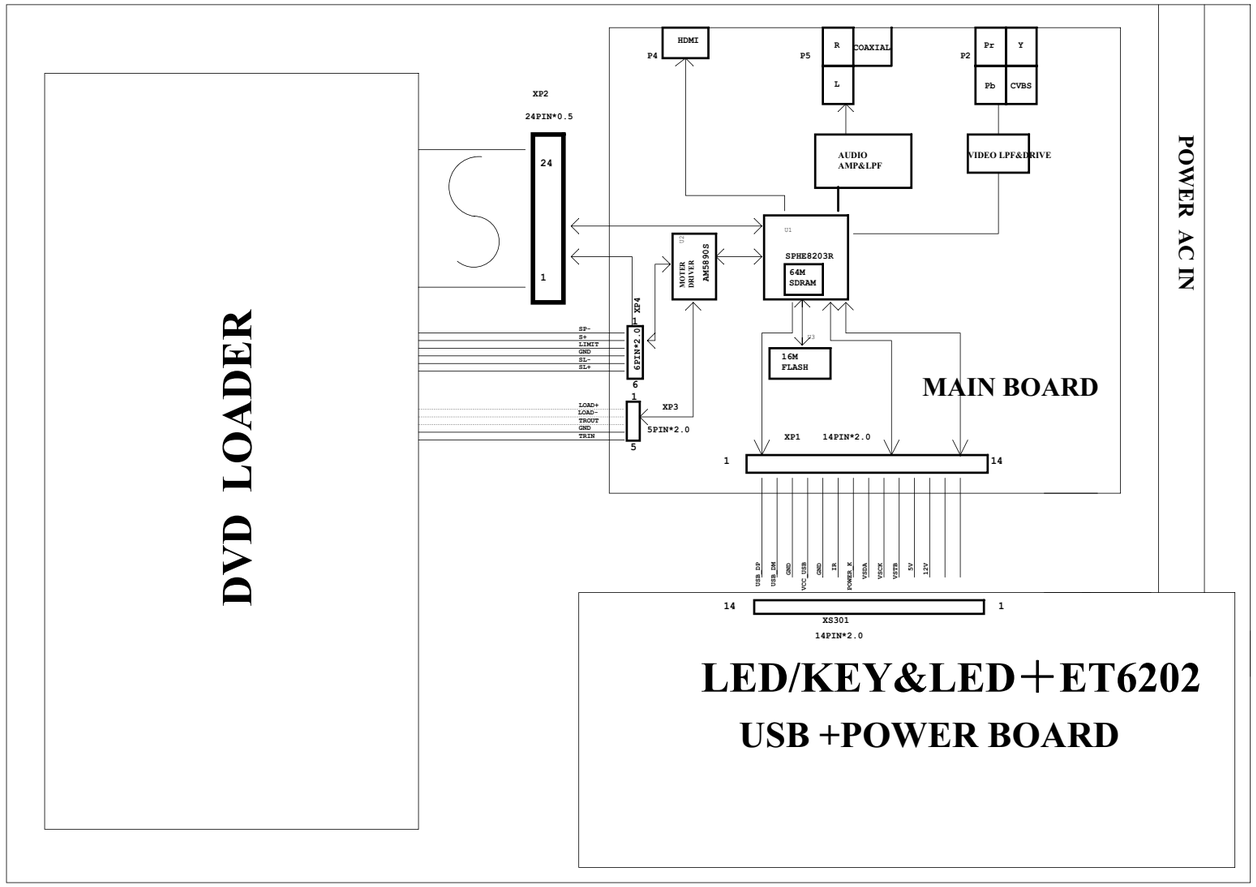
No video picture, no sound.


No video picture, no sound.
Check the cable if that is used to connect TV and DVD Player, is normal
No
Replace the cable
Yes
Check whether all the voltages from the power board to the decoder board are normal.
No
Check the power board
Yes
Check if the reset circuit consisting ofC58 normal (at a low level for tens of milliseconds, then constantly at 3.3V).
No
Change C58,R125,U1
Yes
Check if there is 27MHz signal output in
No
Crystal oscillator X3 and peripheral components are defected or eroded.
Yes
Check if the component of vidio output circuit.
No
Change the bad component
Yes
Check U1 and Replace U1

5-1

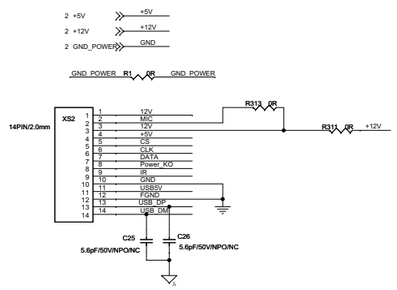
DVP3680KX Wiring Diagram and Block Diagram

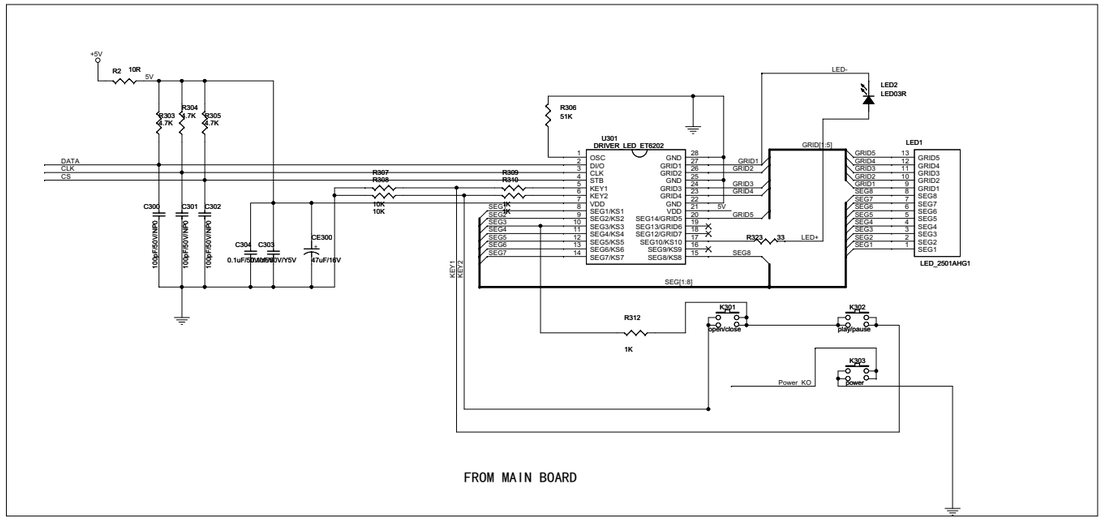
SPHE8203R 2CH + CVBS+YUV+COAXIAL+HDMI DIAGRAM

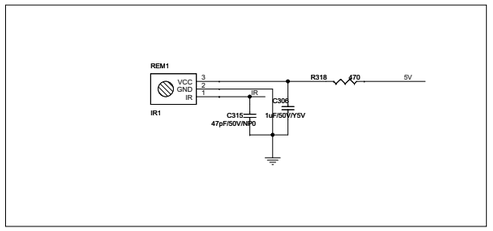


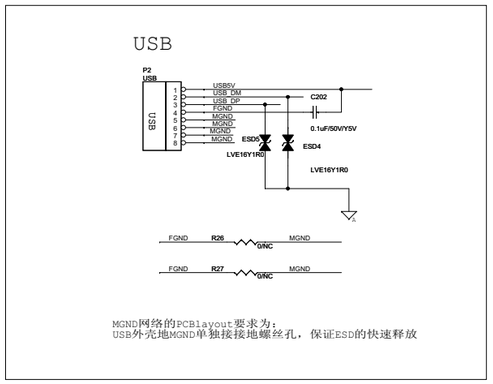
6-1

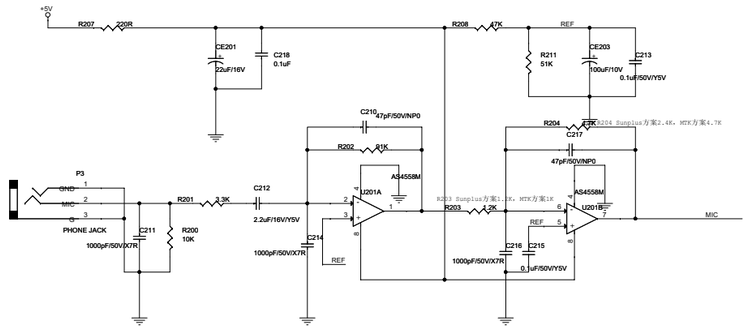
Front+Power+USB+KOK Board Circuit Diagram:





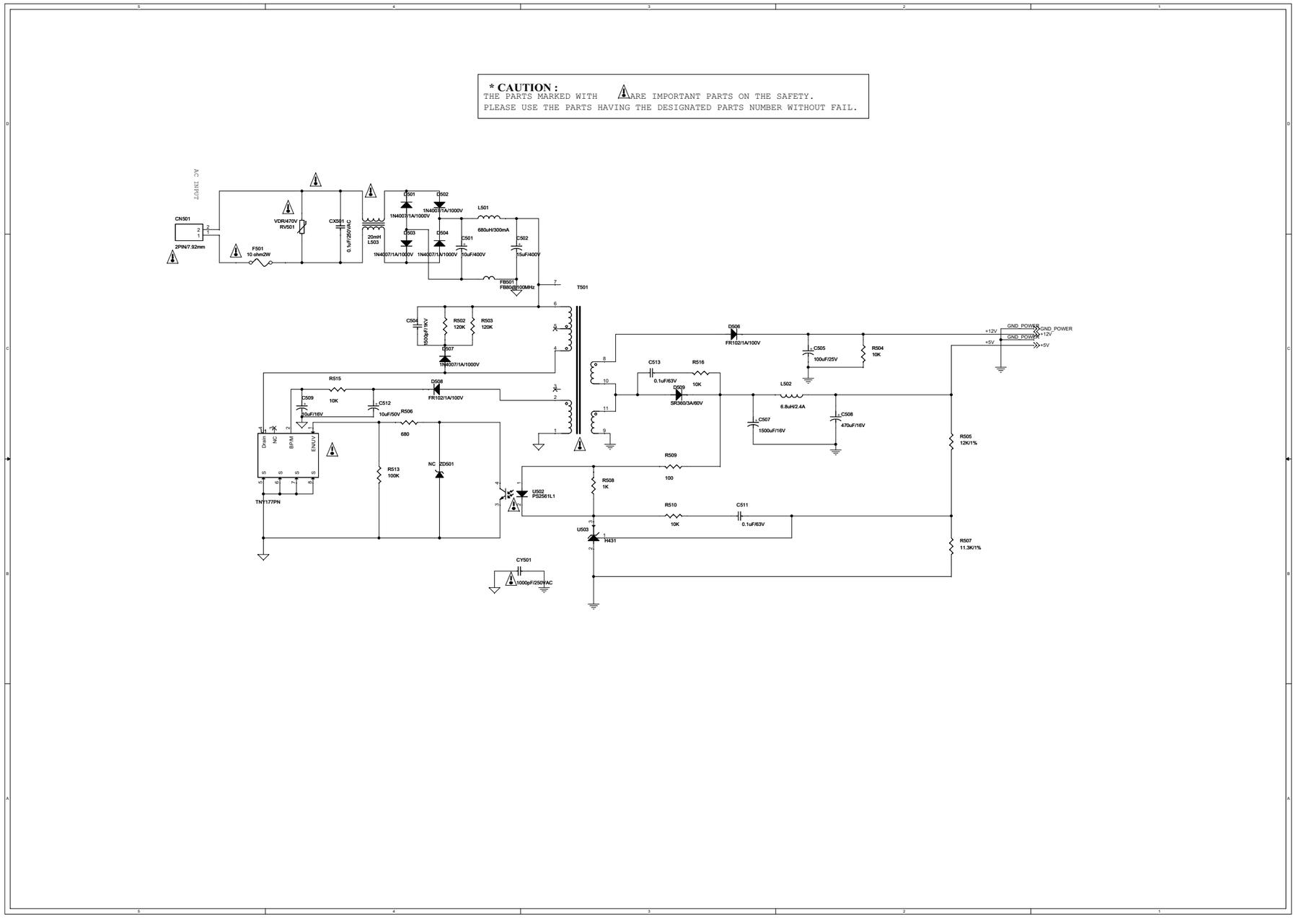






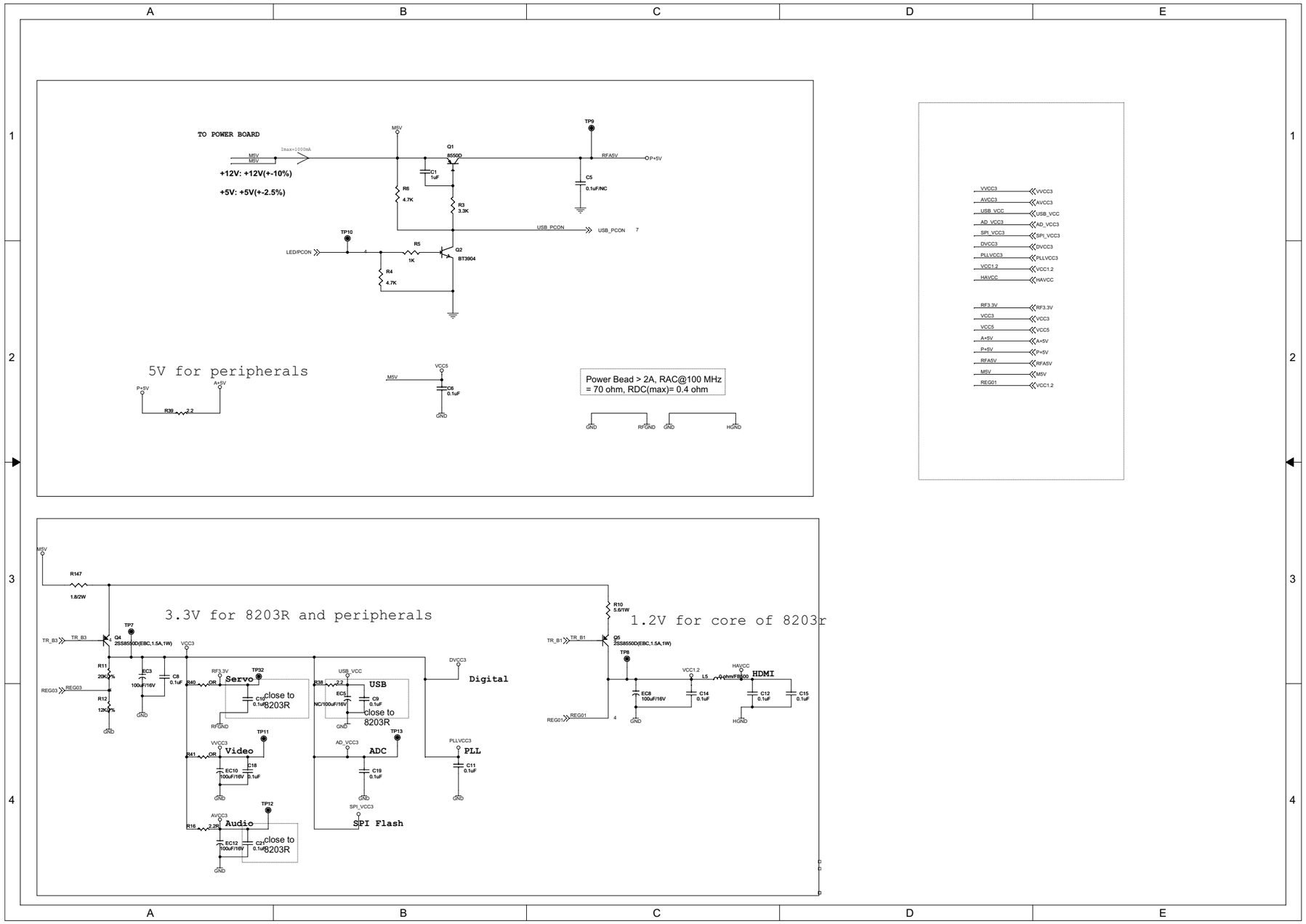
6-2

Power Board Circuit Diagram:



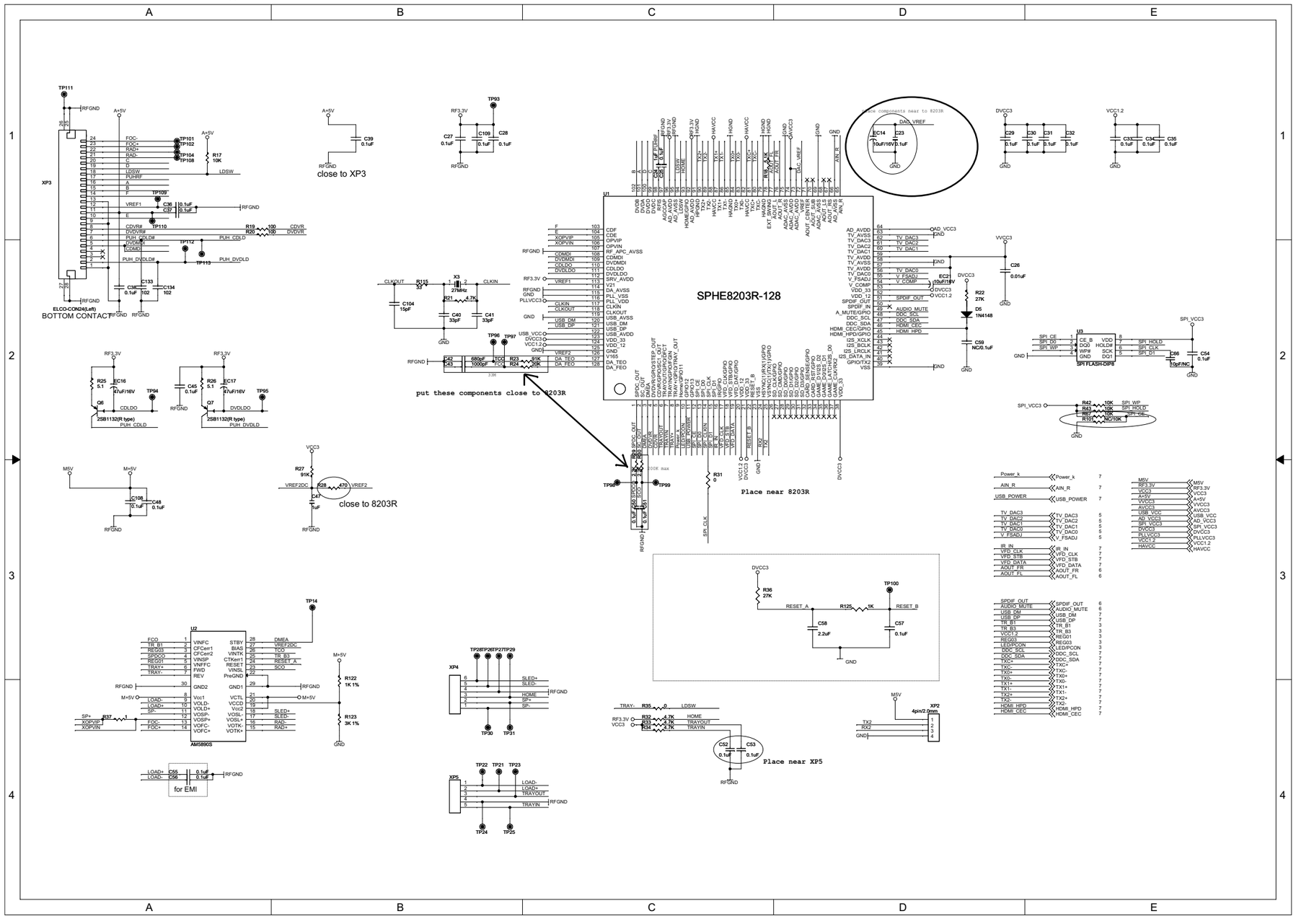
6-3

Main Board Circuit Diagram:power source



6-4

Main Board Circuit Diagram:SPHE8203R

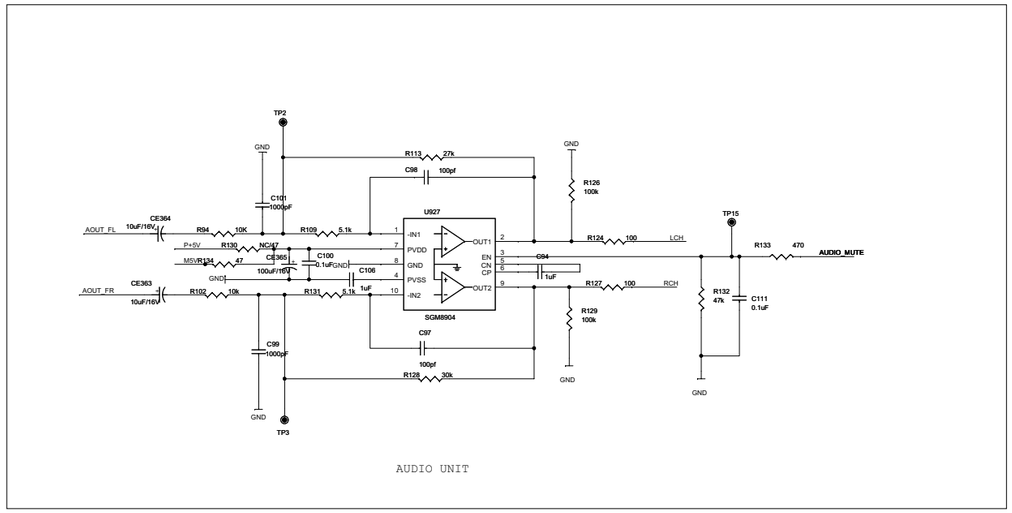


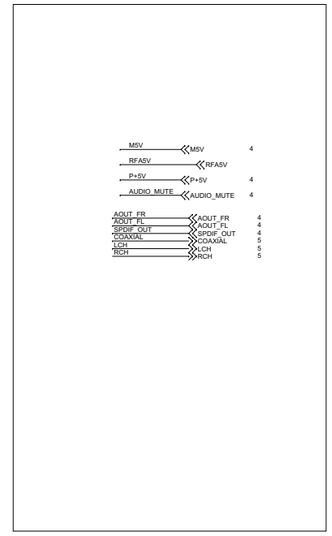
6-5

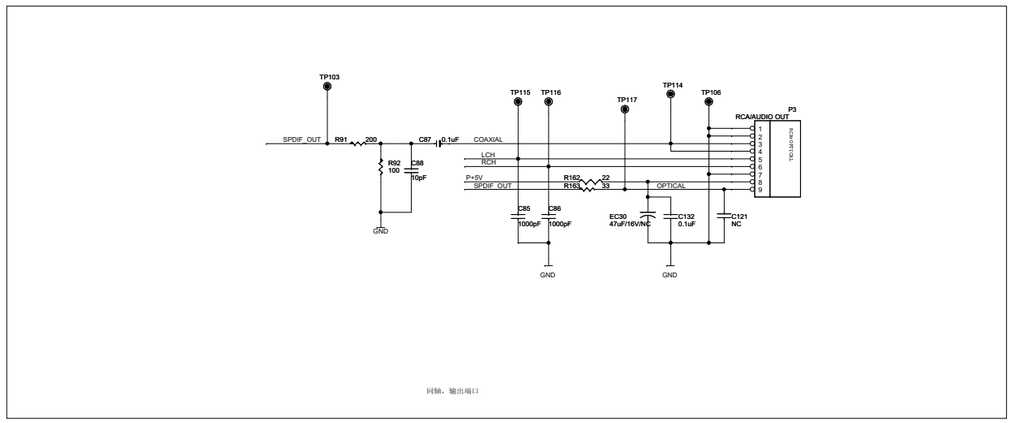
Main Board Circuit Diagram:Video

6-6

Main Board Circuit Diagram:Audio

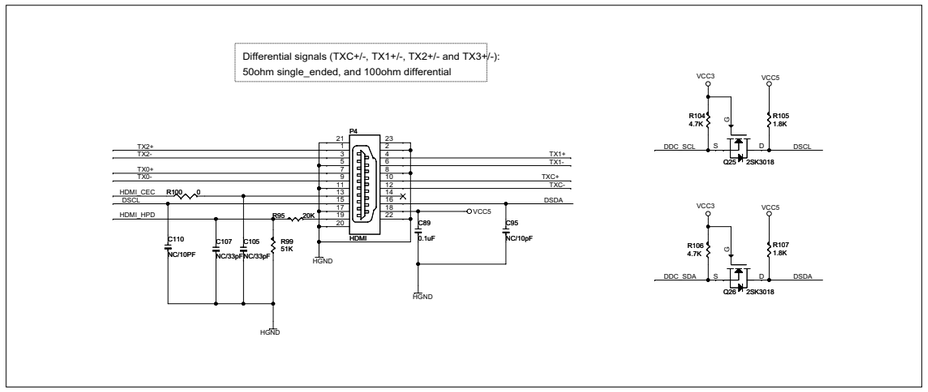


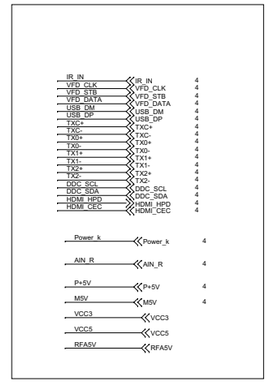


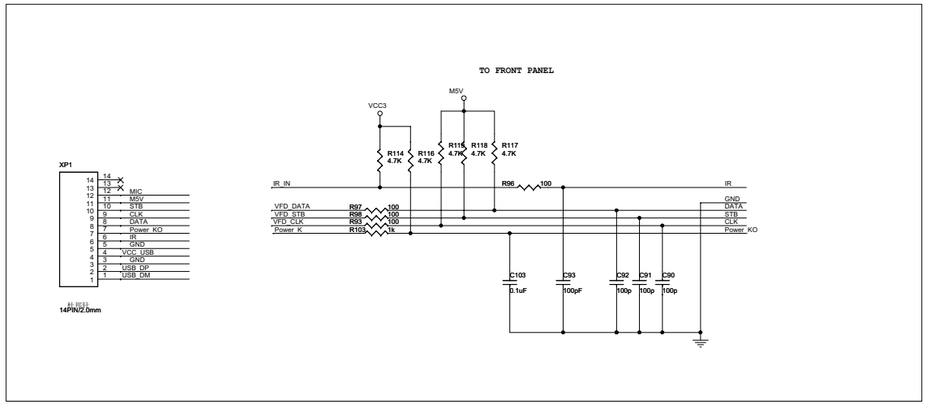


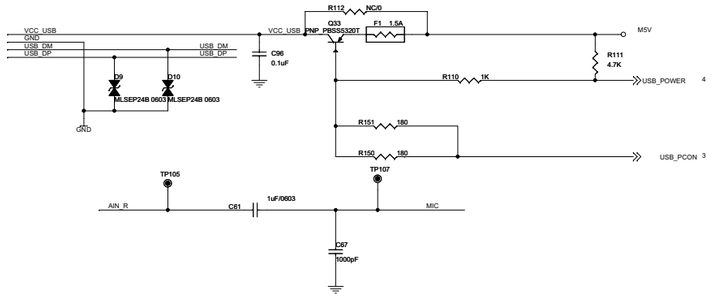
6-7

Main Board Circuit Diagram:HDMI&USB



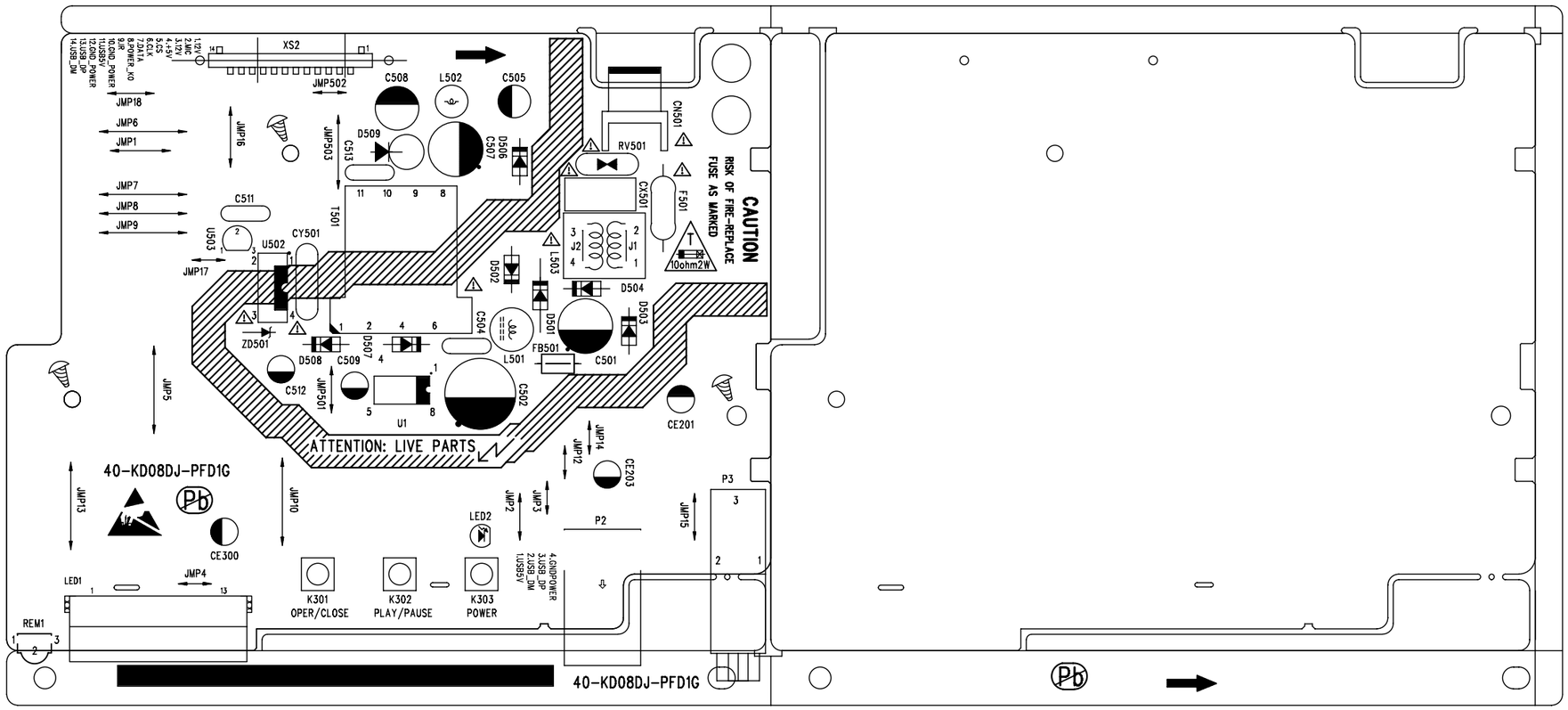






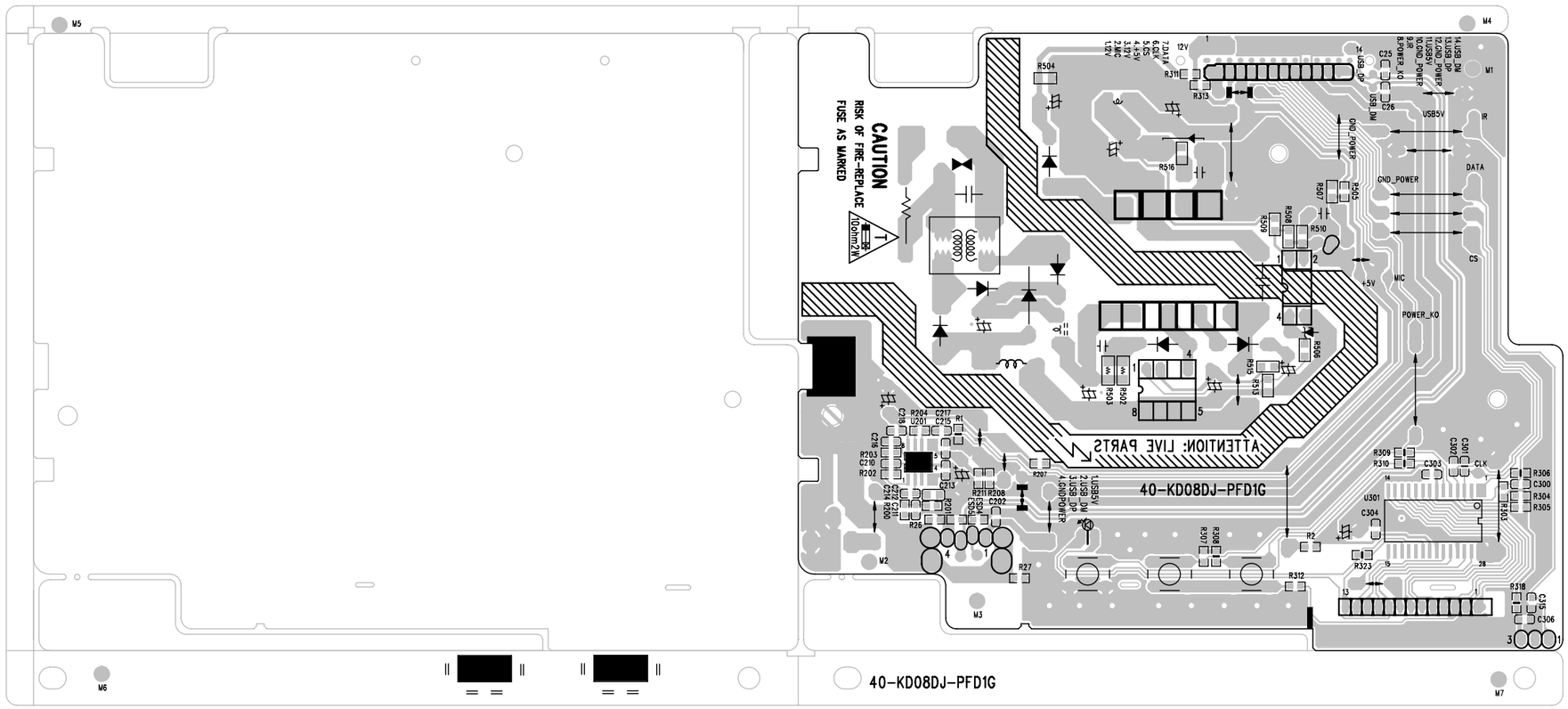
6-8

Front+Power+USB+KOK Board Print-layout(top side):



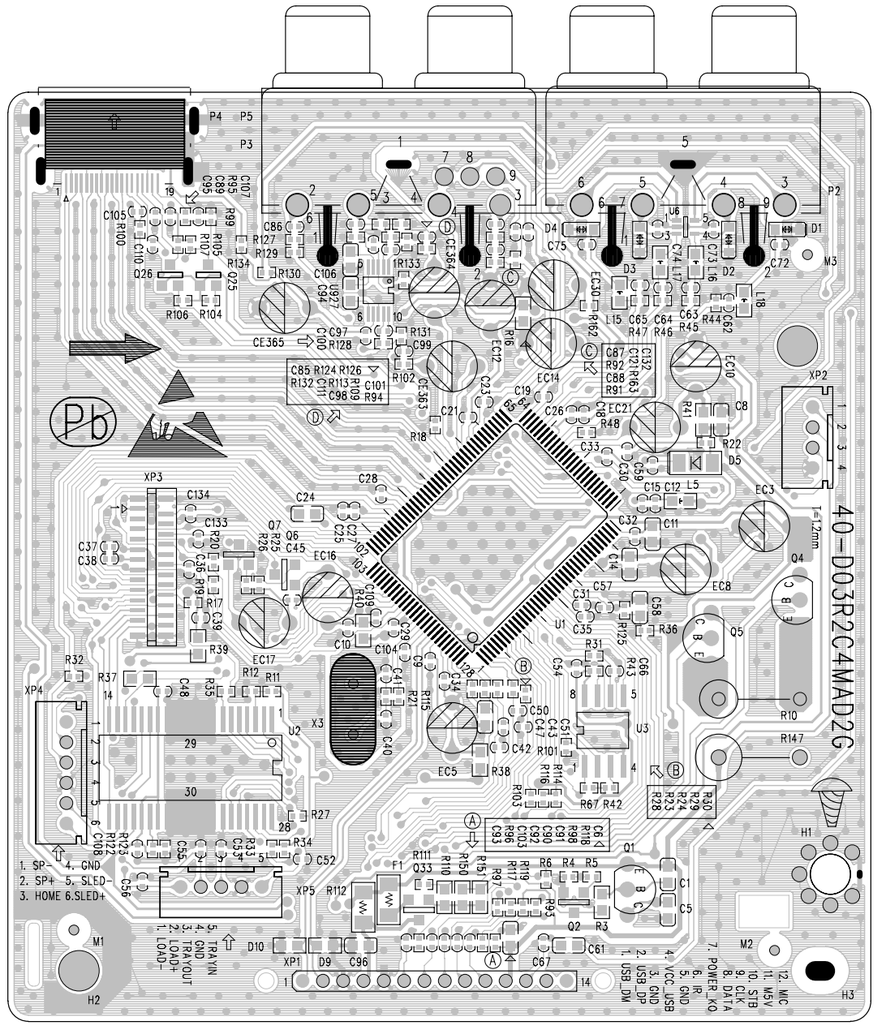
6-9

Front+Power+USB+KOK Board Print-layout(bottom side):



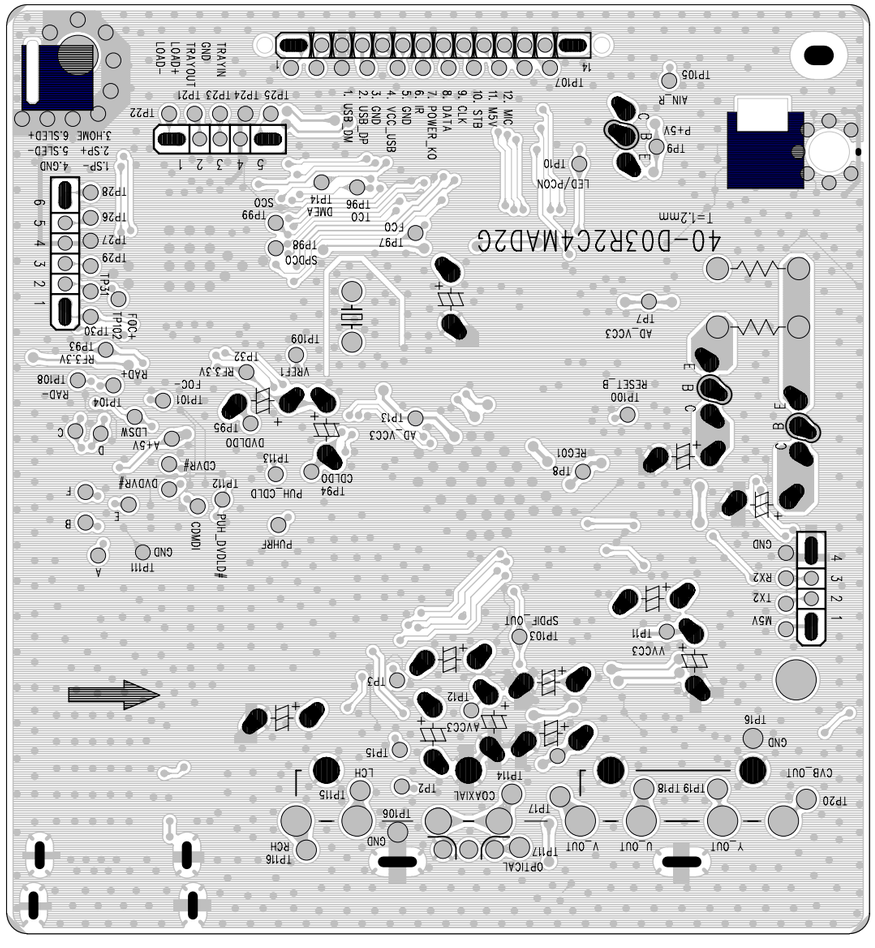
6-10

Main Board Print-layout(top side):

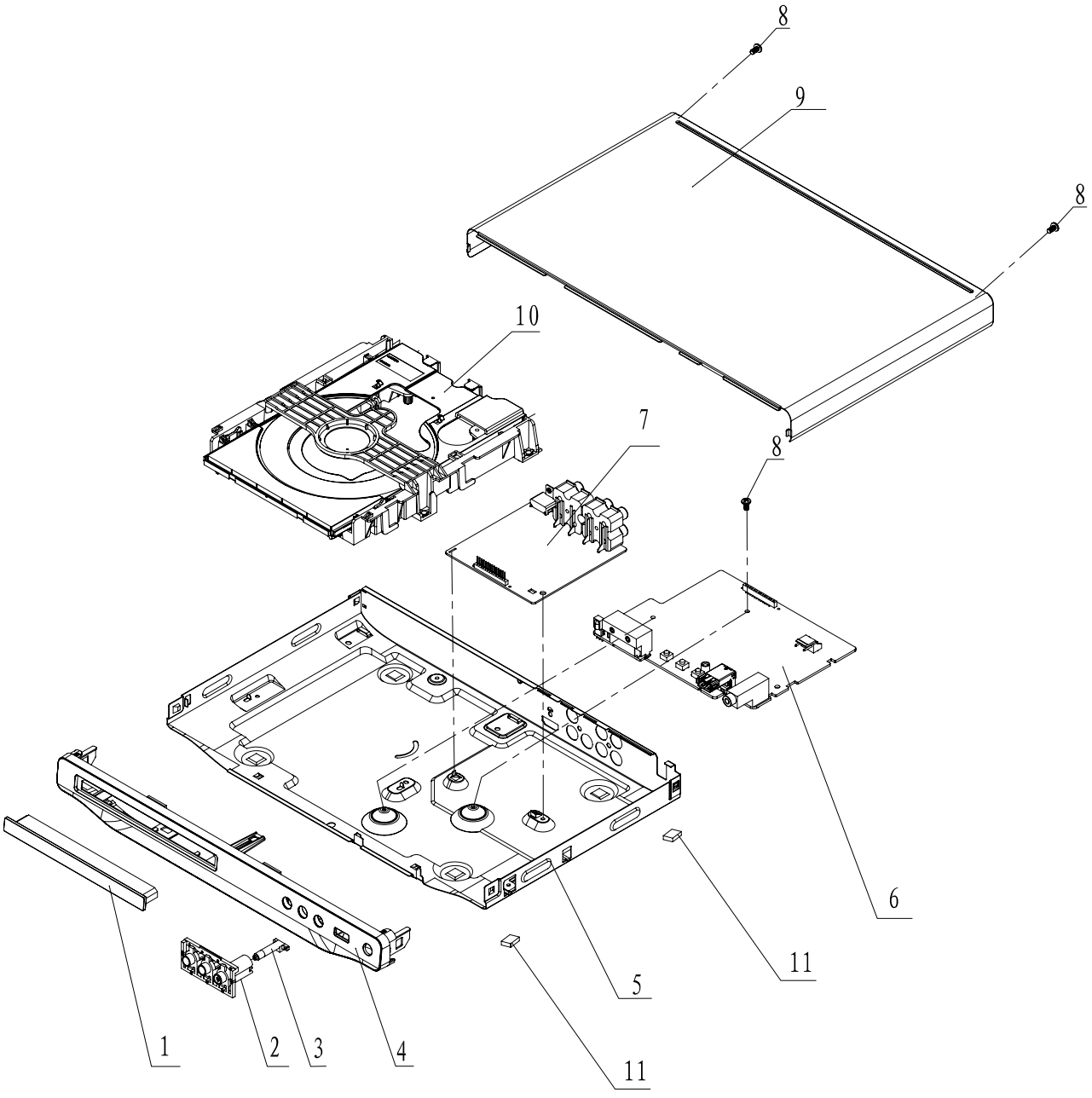

40-D03R2C4MAD2G
1. SP- 4. GND
2. SP+ 5. SLED-
3. HOME 6.SLED+
1. LOAD- 2. LOAD+ 3. TRAYOUT 4. GND 5. TRAYIN
1. USB_DM 2. USB_DP 3. GND 4. VCC_USB 5. GND 6. IR_ 7. POWER_KO 8. DATA 9. CLK 10. STB 11. M5V 12. MIC

6-11

Main Board Print-layout(bottom side):



Exploded View for DVP3680KX/77/78:



Revision List

Version 1.0

* Initial Release for DVP3680KX/77/78